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ABSTRACT

The general purpose of the occupational analysis is to provide workable, basic information dealing with the many and varied duties performed in the lithographic printing occupation. The document opens with a brief introduction followed by a job description. The bulk of the document is presented in table form. Nine duties are broken down into a number of tasks and for each task a table is presented, showing tools, equipment, materials, objects acted upon; performance knowledge (related also to decisions, cues and errors); safety--hazard; science; math--number systems; and communications. The duties include: performing layout and design, paste-up, and proofing functions; performing type setting, stripping, platemaking and proofing, and finishing operations; operating offset presses and cameras, and processing film. (BP)

Occupational Analysis

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LITHOGRAPHIC PRINTER

Instructional Materials Laboratory
Trade and Industrial Education
The Ohio State University
5237

AN ANALYSIS OF THE LITHOGRAPHIC PRINTING OCCUPATION

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The Instructional Materials Laboratory
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FOREWORD

The occupational analysis project was conducted by The Instructional Materials Laboratory, Trade and Industrial Education, The Ohio State University in conjunction with the State Department of Education, Division of Vocational Education pursuant to a grant from the U.S. Office of Education.

The Occupational Analysis project was proposed and conducted to train vocational educators in the techniques of making a comprehensive occupational analysis. Instructors were selected from Agriculture, Business, Distributive, Home Economics, and Trade and Industrial Education to gain experience in developing analysis documents for sixty-one different occupations. Representatives from Business, Industry, Medicine, and Education were involved with the vocational instructors in conducting the analysis process.

The project was conducted in three phases. Phase one involved the planning and development of the project strategies. The analysis process was based on sound principles of learning and behavior. Phase two was the identification, selection and orientation of all participants. The training and workshop sessions constituted the third phase. Two-week workshops were held during which teams of vocational instructors conducted an analysis of the occupations in which they had employment experience. The instructors were assisted by both occupational consultants and subject matter specialists.

The project resulted in producing one hundred two trained vocational instructors capable of condulting and assisting in a comprehensive analysis of various occupations. Occupational analysis data were generated for sixty-one occupations. The analysis inlcuded a statement of the various tasks performed in each occupation. For each task the following items were identified: tools and equipment; procedural knowledge; safety knowledge; concepts and skills of mathematics, science and communication needed for successful performance in the occupation. The analysis data provided a basis for generating instructional materials, course outlines, student performance objectives, criterion measures, as well as identifying specific supporting skills and knowledge in the academic subject areas.

PREFACE

This analysis document was developed by tradespeople and teachers who had experienced work in both the larger and smaller printing businesses. While in larger printing firms, workers tend to specialize within certain job tities, they often are able to successfully function in all areas or duties of the trade. In smaller printing firms it may be a requirement for a tradesperson to function in all areas. This analysis was conducted with the idea that a tradesperson should be able to function in more than one area of lithography. This analysis covers a variety of duties and tasks encountered in lithography.

ACKNOWLEDGMENT

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JOB DESCRIPTION

Lithographic printers develop, process, and reproduce printed copy. In order to produce finished printed products the printer may prepare copy by constructing layouts, performing typesetting operations, pasting-up materials, and preparing them for photographing. Once a copy is prepared it must be proofread, photographed, and developed into plates. The lithographic printer will print the copy using the offset press, and may be called upon to perform finishing operations such as binding.

Duty A Performing Layout and Design Functions

1 Organize layout work flow
2 Write layout specifications
3 Compute dimensions on layouts
4 Construct and design layouts
5 Read and correct layouts
6 Make dummies of layouts
7 Maintain art files

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(TASK STATEMENT) ORGANIZE LAYOUT WORK FLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Line gauge
Ruler
Proportional wheel
Office supplies
Type samples
Paper samples
Ink book
Clip art
Press type
Paper
Instructions (job ticket)
Copy
Art work
Pre-printed samples

PERFORMANCE KNOWLEDGE

Organize flow by sorting, marking, distributing and expediting material

SAFETY - HAZARD

DECISIONS	CUES	ERRORS
Determine job priority to begin layout Identify style, size and families of type, margins, line lengths in printer's measure and inches Identify art, copy, samples and mark up Compute proportions and sizes Interpret all instructions and information Determine sequence	Appearance of copy or art work	Complicates production Loss of time

SCIENCE

Color:
Effect of illumination
Surface color
Mixing spectrum colors and primary colors
Additive method of color mixing
Subtractive method of color mixing

MATH - NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measures of time in tenths of an hour
Ratio and proportions
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

TASK STATEMENT) WRITE LAYOUT SPECIFICATIONS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Type specimens
Paper catalog
Ink sample books
Proportional wheel
Office supplies
Paper samples
Paper
Line gauge
Ruler
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Mark type sizes and styles
Use paper catalog to select paper
Indicate best method to produce the assigned piece of printing
Use ink sample book to select colors
Figure cost factors

SAFETY – HAZARD

DECISIONS

Match art work with available materials:
- available type faces
- select paper
- select ink
- select type sizes and style

CUES

Appearance of color, type and paper

ERRORS

Does not conform to customer's specifications
Loss of time and material
Loss of customer confidence

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection
Optics: reflection refraction, concave, convex magnification

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
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CAUTION

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(TASK STATEMENT) COMPUTE DIMENSIONS ON LAYOUTS

TOOLS, EQUIPMENT, MATERIALS OBJECTS ACTED UPON

Line gauge
Ruler
Proportion wheel
Office supplies
Paper
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Convert picas and points to inches
Convert inches to pica and points
Use proportion wheel
Use diagonal line method of enlarging and reducing
Use percentage signs
Convert percentages to dimensions

SAFETY - HAZARD

DECISIONS	CUES	ERRORS
Determine proper proportions. Size of type Size of windows Size of over all productions	Appearance of proportions and sizes	Will not conform to customer's specifications Loss of time, material, and customer's confidence

SCIENCE

MATH - NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
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CAUTIONS
All written communications should be printed legibly

TASK STATEMENT) CONSTRUCT AND DESIGN LAYOUTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Line gauge
Ruler
Proportional wheel
Drafting tools
Line-up tools (drafting)
Office supplies
Block out material
Waxer
Type samples
Paper samples
Ink samples
Clip art
Press type
Cutting tools
Sand paper
Paper
Tissue overlay
Acetate overlay
Art board
Instructions(job ticket)
Copy

PERFORMANCE. KNOWLEDGE

Draw design art and comprehensive sketches
Position type and art work
Construct margins on books
Cut acetate overlays
Construct dummies
Proofread copy
Use paper catalogs
Use ink catalogs
Apply basic drafting principles

SAFETY – HAZARD

Use caution with cutting tools - (hazard) potential body cuts
Always disconnect electrical components - (hazard) overheating causing fire

DECISIONS	CUES	ERRORS
Determine compatible type fonts Determine balance of space Determine color coordination Determine composition Determine continuity of design Determine aesthetic value	Appearance of layout	Loss of time Loss of material Loss of aesthetic value Loss of customer confidence Improper fitting of copy

SCIENCE

Color: effect of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection
Optics: reflection refraction, concave, convex magnification

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measure of length in inches, picas, points and converting between each
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COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTIONS
All written communications should be printed legibly

(TASK STATEMENT) READ AND CORRECT LAYOUTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY - HAZARD
Office supplies Dictionary Completed layout Specification sheet Original copy Type style books Instructions (job ticket)	Use dictionary for spelling and word division Mark corrections on layout with proofreader's marks Revise and edit proofs to conform to customer's specifications Make necessary changes and corrections	

DECISIONS	CUES	ERRORS
Determine if all specifications conform	Appearance	Incorrect layout Loss of time, material and customer's confidence

SCIENCE	MATH - NUMBER SYSTEMS	COMMUNICATIONS
	Addition, subtraction, multiplication and division of whole numbers, fractions and decimals Rounding off decimals and whole numbers Changing percents to fractions and fractions to percents Finding a percent of a number and what percent one number is of another Measures of length in inches, picas, points and converting between each Measurement of time in tenths of an hour Ratio and proportions Reading and interpreting charts, tables and/or graphs Sequential ordering Axioms of basic mathematics (short cuts) Commutative, associative and distributive	Choose and interpret technical manuals needed to perform task Interpret graphic arts jargon Read and write (print) information necessary to complete departmental functions Oral communications between departments and individuals CAUTION All written communications should be printed legibly Comprehend and use proofreader's marks

TASK STATEMENT) MAKE DUMMIES OF LAYOUTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Line gauge Ruler Straight edge Office supplies Razor blades Paper Cutting tool Instructions (job ticket)	Construct proper dummy to conform to customer specifications	Use caution with cutting tools - (hazard) potential body cuts

DECISIONS	CUES	ERRORS
Identify style of dummy needed to conform to customer specifications: proof copy layout folding clarity	Appearance	Will not conform to customer specifications Loss of time, material, and customer confidence

SCIENCE	MATH -- NUMBER SYSTEMS	COMMUNICATIONS
	Addition, subtraction, multiplication and division of whole numbers, fractions and decimals Rounding off decimals and whole numbers Changing percents to fractions and fractions to percents Finding a percent of a number and what percent one number is of another Measures of length in inches, picas, points and converting between each Measurement of time in tenths of an hour Ratio and proportions Reading and interpreting charts, tables and/or graphs Sequential ordering Axioms of basic mathematics (short cuts) Commutative, associative and distributive	Choose and interpret technical manuals needed to perform task Interpret graphic arts jargon Read and write (print) information necessary to complete departmental functions Oral communication between departments and individuals CAUTION All written communications should be printed legibly

(TASK STATEMENT) MAINTAIN ART FILES

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

File case
Manila envelopes
File cards or sheets
File card case or note books
Typewriter, pens, pencils
Art work to be filed
Reproduction to be filed
Photo mechanical transfers to be filed
Original copy to be filed
Office supplies

PERFORMANCE KNOWLEDGE

File art work, layouts, copy and samples in chronological, alphabetical, numerical and customer order

DECISIONS

Determine what to file
Determine when to file
Determine where to file
Determine what method used to file

CUES

Company policy

ERRORS

Loss of material
Loss of time
Loss of customer confidence

SAFETY – HAZARD

SCIENCE

MATH – NUMBER SYSTEMS

Reading and interpreting charts, tables and/or graphs
Sequential ordering

COMMUNICATIONS

Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

Duty B Performing Type Setting Operations

1 Organize composition work flow
2 Program and set-up composing machines
3 Set composition
4 Edit and correct composition
5 Maintain and service composing machines

TASK STATEMENT) ORGANIZE COMPOSITION WORK FLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Composing machine
Copy
Office supplies
10 x 12 envelopes
Line gauge
Machine scales
Snopake (+m)
Proportional wheel
Loose leaf folder
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Organize flow by sorting, marking, distributing, and expediting material

DECISIONS

Determine order to set copy
Organize copy in proper sequence
Identify style size and families of type, margins, line lengths in printer's measure
Organize and compose setting and mark up
Compute proportions in size using proportions wheel

CUES

Appearance of copy

ERRORS

Complicates production
Loss of time

SAFETY – HAZARD

SCIENCE

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportions
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communications between departments and individuals

CAUTION

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TASK STATEMENT) PROGRAM AND SET–UP COMPOSING MACHINES

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Composing machine
Machine scales
Machine reference manual
Office supplies
Line gauge
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Program or set-up composing machine
Set point size, line length, spacing and family font
Check impression, ribbon, power general operation
Type test copy for accuracy of programing

SAFETY – HAZARD

Caution should be taken to keep objects from falling into machine - (hazard) damage to machine and injury to operator
Turn off power to motor when machine is not in use – (hazard) overheating, possible fire or damage to machine

DECISIONS

Determine line length
Determine point size
Determine tabulation
Determine proper impression
Determine line spacing

CUES

Appearance of composition

ERRORS

Incorrect composition
Loss of time

SCIENCE

Electrical power and principle of power overload (fusing)
Simple machines to gain mechanical advantage (levers, gears, and pulleys)
Work input, work output, friction and efficiency in simple machines

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportions
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions,
Oral communications between departments and individuals

CAUTION
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TASK STATEMENT) SET COMPOSITION

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Composing machine
Machine scales
Machine reference manual
Office supplies
Line gauge
White opaque
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Operate machine necessary to complete job
Set operation of machine, and adjustments: line up, spacing, impression, photographic quality, chemical deterioration mechanical
Check completed job for any mechanical problems related to machine operation

SAFETY - HAZARD

Caution should be taken to keep objects from falling into machine - (hazard) damage to machine and injury to operator
Turn off power to motor when machine is not in use – (hazard) overheating, possible fire or damage to machine

DECISIONS

Determine if machine is functioning properly
Determine if machine is maintaining setup

CUES

Appearance of set composition

ERRORS

Incorrect composition
Time loss
Bad copy

SCIENCE

Basic dark room procedures: camera optics, $E=I/a^2$, mixing chemicals, time and temperature ratios
Refraction of light
Simple machines to gain mechanical advantage (levers, gears, and pulleys)
Work input, work output, friction and efficiency in simple machines

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
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Measures of length in inches, picas, points and converting between each
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Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION

All written communications should be printed legibly
Comprehend and use proofreader's marks

TASK STATEMENT) EDIT AND CORRECT COMPOSITION

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Copy Pencil Office supplies Line gauge 10 x 12 envelopes Proofs Instructions (job ticket)	Use dictionary for spelling and work division Mark corrections on proof with standard proofreader marks Revise and edit proofs to conform to customer's specifications Make necessary changes and corrections	

DECISIONS	CUES	ERRORS
Evaluate proof for conformity of customer's specifications	Appearance of composed copy Layouts and proofs	Clarity of communication Incorrect composition Loss of time

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
	Addition, subtraction, multiplication and division of whole numbers, fractions and decimals Measurement of time in tenths of an hour Ratio and proportions	Choose and interpret technical manuals needed to perform task Interpret graphic arts jargon Read and write (print) information necessary to complete departmental functions Oral communication between departments and individuals CAUTION All written communications should be printed legibly

(TASK STATEMENT) MAINTAIN AND SERVICE COMPOSING MACHINES

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

- Wrenches
- Screwdrivers
- Pliers
- Allen wrenches
- Fine oil
- Grease
- Brushes
- Cleaning solvent
- Fuses
- Line gauge
- Darkroom chemicals
- Cutting tools
- Ribbon
- Electrician's tape
- Photographic paper
- Composing machine
- Office supplies

PERFORMANCE KNOWLEDGE

- Lubricate according to machine manuals
- Check and make all adjustments in accordance with machine manuals
- Inspect and clean all pumps and motors
- Clean and dust grease and lint from machines
- Repair all minor electric and mechanical malfunctions

SAFETY -- HAZARD

- Electrical precautions - (hazard) electrical shock, burn and overheating
- Operate machine manually before turning on machine - (hazard) damage to equipment and injury to operator
- Use proper tools and pressures - (hazard) damage to equipment and injury to operator
- Collect and account for tools before operating - (hazard) damage to equipment and injury to operator
- Do not inhale toxic fumes (hazard) potential respiratory injury

DECISIONS

- Evaluate complexity of repairs
- Judge when qualified serviceperson is needed
- Determine if machine is functioning properly

CUES

- Sound of machine in operation
- Manufacturer's specifications
- Operation manual

ERRORS

- Additional damage to machinery
- Increase machines down time
- Increased costs of repairs
- Accelerated depreciation of machine

SCIENCE

- Machines: used to gain mechanical advantage (levers, gears, and pulleys)
- Work: input, output, friction and efficiency in simple machines
- Light: nature of absorption, reflection
- Optics: reflection refraction, concave, convex magnification
- State of matter: vaporization, chemical reaction, light, heat
- Atoms: static electricity and absorption
- Force: resistance, distortion, inertia and momentum friction

MATH -- NUMBER SYSTEMS

- Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
- Measure of speed and r.p.m.
- Axioms of basic mathematics (short cuts)
- Commutative, associative and distributive

COMMUNICATIONS

- Choose and interpret technical manuals needed to perform task
- Interpret graphic arts jargon
- Read and write (print) information necessary to complete departmental functions
- Oral communication between departments and individuals

CAUTION

All written communications should be printed legibly

Duty C Performing Paste-up Functions

1 Organize paste-up work flow
2 Layout and position paste-ups
3 Locate and position windows on paste-ups
4 Paste-up copy
5 Check finished paste-ups

(TASK STATEMENT) ORGANIZE PASTE–UP WORK FLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Copy
Pencil
Paper or memo pads
Envelopes
Stapler
Paper clips
Loose leaf folder
Reproductions
Art work
Photographs
Prescreened photographs
Photo mechnical transfers
Proofs
Furnish art
All layouts
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Organize work flow by sorting, marking distributing and expediting materials

DECISIONS

Determine priorities
Determine sequence
Identify segments to complete paste-up
Compute proportions and sizes
Interpret all instruction and information

CUES

Appearance of copy

ERRORS

Complicates production
Loss of time
Loss of material

SAFETY – HAZARD

SCIENCE

MATH – NUMBER SYSTEMS

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

(TASK STATEMENT) LAYOUT AND POSITION PASTE-UPS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Line gauge
Ruler
Proportional wheel
Drafting tools
Drafting line-up tools
Office supplies
Block out material
Waxer
Type samples
Paper samples
Ink samples
Clip art
Press type
Cutting tools
Sand paper
Paper
Tissue overlay
Acetate
Art board
Instructions (job tickets)
Copy

PERFORMANCE KNOWLEDGE

Mark the size of camera ready copy for proper proportions
Construct layout sheet dimensions for paste up copy
Accurately locate all copy blocks in non-photographic pencil on layout sheet

SAFETY - HAZARD

Use caution with cutting tools - (hazard) potential body cuts
Always disconnect electrical components - (hazard) overheating causing fire

DECISIONS	CUES	ERRORS
Determine balance of space Determine continuity of design Judge esthetic value	Appearance of completed paste-up	Loss of time, material, esthetic value, and customer confidence Improper fitting of paste up

SCIENCE

Color: effects of illumination on color, surface color, mixing **spectrum colors**, mixing primary colors, mixing complimentary **colors, additive and subtractive** mixing (transparent and opaque)
Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection

MATH - NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
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Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportions
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

(TASK STATEMENT) LOCATE AND POSITION WINDOWS ON PASTE–UPS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Line gauge
Ruler
Proportional wheel
Drafting tools
Drafting line-up tools
Office supplies
Block out materials
Waxer
Type samples
Paper samples
Ink samples
Clip art
Press type
Cutting tools
Sand paper
Paper
Tissue overlay
Acetate
Art board
Instructions (job ticket)
Copy

PERFORMANCE KNOWLEDGE

Position windows and cut to specified size and shape
Position and cut opaque material to specifications accurately using T-squares, triangles, french curves, straight edge and compasses

SAFETY – HAZARD

Use caution with cutting tools - (hazard) potential body cuts
Always disconnect electrical components - (hazard) overheating causing fire

DECISIONS

Determine location of window
Determine size and shape of window
Select proper tools

CUES

Appearance of windows

ERRORS

Paste up will not comply to customer's specifications
Loss of time, material, and customer's confidence

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection
Optics: convex magnification
Atoms: static electricity

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportions
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

(TASK STATEMENT) PASTE-UP COPY

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

- Line gauge
- Ruler
- Proportional wheel
- Office supplies
- Type samples
- Paper samples
- Ink book
- Clip art
- Press type
- Paper
- Instructions (job ticket)
- Copy
- Art work
- Pre-printed samples
- Repros
- Photographs
- Prescreened photographs
- Photo print material
- All layouts

PERFORMANCE KNOWLEDGE

- Trim repros, art work, type photo mechanical transfer, pre-screened photographs, furnished arts to predetermined size
- Adhere copy to pre-constructed layout using wax, rubber cement, and clear tape accurately

SAFETY - HAZARD

- Use caution with cutting tools - (hazard) potential body cuts
- Always disconnect electrical components - (hazard) overheating causing fire

DECISIONS

- Determine best method of pasting copy down
- Determine proper sequence of operation

CUES

- Quality of adhesive
- Appearance of completed paste-up

ERRORS

- Lack of durability of paste-up
- Loss of time
- Damage to paste-up material

SCIENCE

- Color: effects of illumination of color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
- Machines: used to gain mechanical advantage (levers, gears, and pulleys)
- Work: input, output, friction and efficiency in simple machines
- Light: nature of, absorption, reflection
- Optics: reflection refraction, concave, convex magnification

MATH - NUMBER SYSTEMS

- Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
- Rounding off decimals and whole numbers
- Changing percents to fractions and fractions to percents
- Finding a percent of a number and what percent one number is of another
- Measures of length in inches, picas, points and converting between each
- Measurement of time in tenths of an hour
- Ratio and proportions
- Reading and interpreting charts, tables and/or graphs
- Sequential ordering
- Measure of speed and r.p.m.
- Axioms of basic mathematics (short cuts)
- Commutative, associative and distributive

COMMUNICATIONS

- Choose and interpret technical manuals needed to perform task
- Interpret graphic arts jargon
- Read and write (print) information necessary to complete departmental functions
- Oral communication between departments and individuals

CAUTION

- All written communications should be printed legibly

TASK STATEMENT) CHECK FINISHED PASTE–UP

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Line gauge
Ruler
Proportional wheel
Office supplies
Type samples
Paper samples
Ink book
Clip art
Press type
Paper
Instructions (job ticket)
Copy
Art work
Pre-printed samples
Original copy
Paste-up
Corrected art

PERFORMANCE KNOWLEDGE

Check paste-up with job specs original copy, comprehensive art
Trim corrected art and composition to fit
Adhere changes to paste-up

SAFETY – HAZARD

Use caution with cutting tools - (hazard) potential body cuts
Always disconnect electrical components - (hazard) overheating causing fire

DECISIONS	CUES	ERRORS
Determine if all specifications conform	Appearance of paste-up	Incorrect paste-up Loss of time, materials, and customer confidence

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Light: nature of, absorption, reflection
Optics: reflection refraction, concave, convex magnification

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
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Measures of length in inches, picas, points, and converting between each
Measurement of time in tenths of an hour
Ratio and proportions
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

Duty D Performing Proofing Functions

1 Organize proofreading work flow
2 Read and compare proofs
3 Mark errors on proofs for corrections
4 Distribute corrected proofs and copy

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ASK STATEMENT) ORGANIZE PROOFREADING WORK FLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Original copy Composed copy Layout Artwork Proofs Specifications Instructions (job ticket) Office supplies Line gauge Proportional wheel	Organize objects to be read and checked	

DECISIONS	CUES	ERRORS
Determine priorities Determine sequence Interpret all instructions and information	Appearance of copy and layout	Complicated production Loss of time

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
		Choose and interpret technical manuals needed to perform task Interpret graphic arts jargon Read and write (print) information necessary to complete departmental funcitons Oral communication between departments and individuals CAUTION All written communications should be printed legibly

(TASK STATEMENT) READ AND COMPARE PROOFS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

- Original copy
- Composed copy
- Layout
- Artwork
- Proofs
- Specifications
- Instructions (job ticket)
- Office supplies
- Line gauge
- Proportional wheel

PERFORMANCE KNOWLEDGE

- Read and compare completed paste-up, type composition, layout, and proofs with original copy
- Check completed paste-up, type composition, layout, and proof with specifications and instructions
- Compare all preliminary sketches, comprehensive art and drawings conveying the thoughts and ideas of the editor in the completed copy
- Repeat the above procedure for revisions or change

SAFETY – HAZARD

DECISIONS	CUES	ERRORS
Evaluate proof for conformity of customer specifications	Appearance of proofs	Clarity of communication Incorrect composition Loss of time

SCIENCE

MATH – NUMBER SYSTEMS

- Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
- Rounding off decimals and whole numbers
- Changing percents to fractions and fractions to percents
- Finding a percent of a number and what percent one number is of another
- Measures of length in inches, picas, points and converting between each
- Measurement of time in tenths of an hour
- Ratio and proportions
- Reading and interpreting charts, tables and/or graphs
- Sequential ordering
- Measure of speed and r.p.m.
- Axioms of basic mathematics (short cuts)
- Commutative, associative and distributive

COMMUNICATIONS

- Choose and interpret technical manuals needed to perform task
- Interpret graphic arts jargon
- Read and write (print) information necessary to complete departmental functions
- Oral communication between departments and individuals

CAUTION

All written communications should be printed legibly

TASK STATEMENT) MARK ERRORS ON PROOFS FOR CORRECTIONS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Original copy
Composed copy
Layout
Art work
Proofs
Specifications
Instructions (job ticket)
Office supplies
Line gauge
Proportional wheel

PERFORMANCE KNOWLEDGE

Use proof marks to indicate all errors in spelling, word division positioning, line-up, centering, and construction accuracy of composed copy
Mark questionable continuity
Mark all errors in size of type, windows, reductions, enlargements and dimensions

SAFETY – HAZARD

DECISIONS	CUES	ERRORS
Determine if error exists	Appearance of proofs	Incorrect proofs Loss of time

SCIENCE

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportions
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

TASK STATEMENT) DISTRIBUTE CORRECTED PROOFS AND COPY

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Original copy Composed copy Layout Artwork Proofs Specifications Instructions (job ticket) Office supplies Line gauge Proportional wheel	Organize corrected material and mark for proper department Return copy and proofs to proper department for correction Pass on correctly composed copy to proper department for additional production	

DECISIONS	CUES	ERRORS
Determine proper routing system	Production priority Company policy	Loss of time, proofs, copy

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
		Choose and interpret technical manuals needed to perform task Interpret graphic arts jargon Read and write (print) information necessary to complete departmental functions Oral communication between departments and individuals Comprehend and use proofreader's marks CAUTION All written communications should be printed legibly

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Duty E Operating Camera and Processing Film

1 Organize darkroom work flow
2 Prepare darkroom for operation
3 Make camera settings
4 Expose and process film and print material with camera
5 Expose and process film and print material by contact method
6 Maintain darkroom equipment and make minor repairs

TASK STATEMENT) ORGANIZE DARKROOM WORK FLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Line copy Photographs Color copy Copy dot pictures Art work Airbrush renderings Proportional wheel Clear tape Line gauge Linen tester Felt marker Pencil Scissors Razor blade Densitometer Job ticket Job specifications	Sort work to be photographed into line copy, half tone copy or color copy Crop and size all photographs Check all photographs for density Check all proportions and sizes with job specs Combine work to fit convenient film sizes Indicate best order or sequence to shoot camera copy Check camera ready copy for quality and indicate all shrinks and spreads	

DECISIONS	CUES	ERRORS
Determine priorities and sequence Interpret all instructions and information	Visual observation	Complicate production Loss of time

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque) Work: input, output, friction and efficiency in simple machines Light: nature of, absorption, reflection Optics: reflection refraction, concave, convex magnification $F/no = FL/D$ $E=I/d^2$ State of matter: vaporization, chemical reaction, light, heat	Addition, subtraction, multiplication and division of whole numbers, fractions and decimals Rounding off decimals and whole numbers Changing percents to fractions and fractions to percents Finding a percent of a number and what percent one number is of another Measures of length in inches, picas, points and converting between each Measurement of time in tenths of an hour Ratio and proportions Reading and interpreting charts, tables and/or graphs Sequential ordering Axioms of basic mathematics (short cuts) Commutative, associative and distributive	Choose and interpret technical manuals needed to perform task Interpret graphic arts jargon Read and write (print) information necessary to complete departmental functions Oral communication between departments and individuals CAUTION All written communications should be printed legibly

(TASK STATEMENT) PREPARE DARKROOM FOR OPERATION

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

- Process camera
- Timer
- Developing lights
- Inspection lights
- Safe lights
- Automatic film processor
- Automatic film dryer
- Developing trays
- Densitometer
- Thermometer
- Squeegee
- Cotton wipes
- Film roller
- Vacuum frame
- Point light source
- Darkroom chemicals
- Temperature controlled sink
- Contact screen
- Half tone screen
  - a. glass
  - b. contact
- Bump light
- Tongs
- Filter factor charts
- Filters
- Film
- Photo print material
- Photo print processor
- Film slicer
- Office supplies
- Linen tester
- Mixing containers
- Storing containers
- Measuring containers
- Film drying line
- Gray scale
- Automatic chemical m ixer
- Water supply

PERFORMANCE KNOWLEDGE

- Mix developing chemicals
- Mix stop bath and hypo or fixer
- Check and clean all glass surfaces
- Check and adjust camera lights
- Inspect and clean all developing equipment
- Inspect and clean all camera equipment
- Check all safe and inspection lights
- Order film and maintain supplies
- Check temperature controls and proper setting

SAFETY – HAZARD

- Proper ventilation necessary to remove toxic fumes - (hazard) potential respiratory injury
- Caution should be observed when using caustic chemicals - (hazard) potential injury to skin
- Keep floor dry to eliminate slipping or falling - (hazard) potential injury from slipping and falling
- Oisconnect all electrical power when repairing and servicing equipment - (hazard) potential electrical shock and burns
- Caution observed when using sharp-edged material - (hazard) potential body cuts

DECISIONS	CUES	ERRORS
Determine qualities of mixed chemicals Determine quantities and select film Determine temperatures Determine proper lighting Determine stock inventories	Wasted chemical Wasted film Bad negatives Out-dated material Visual observation of equipment	Increased costs Loss of time Poor quality

SCIENCE

- Machines: used to gain mechanical advantage (levers, gears, and pulleys)
- Work; input, output, friction and efficiency in simple machines
- Light: nature of, absorption, reflection
- Optics: reflection refraction, concave, convex magnification
  $F/no = FL/D \quad E = I/d^2$
- State of matter: vaporization, chemical reaction, light, heat

MATH – NUMBER SYSTEMS

- Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
- Rounding off decimals and whole numbers
- Changing percents to fractions and fractions to percents
- Finding a percent of a number and what percent one number is of another
- Measures of length in inches, picas, points and converting between each
- Ratio and proportion
- Reading and interpreting charts, tables and/or graphs
- Sequential ordering
- Measure of speed and r.p.m.
- Commutative, associative and distributive
- Measurement of time in tenths of an hour

COMMUNICATIONS

- Choose and interpret technical manuals needed to perform task
- Interpret graphic arts jargon
- Read and write (print) information necessary to complete departmental functions
- Oral communications between departments and individuals

CAUTION

- All written communications should be printed legibly

TASK STATEMENT) MAKE CAMERA SETTINGS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Line gauge
Proportion scale
Office supplies
Scratch pad
Filter factor charts
Linen tester
Densitometer
Camera manual
Process camera
Timer
Felt pen
Instructions (job ticke.)

PERFORMANCE KNOWLEDGE

Inspect art work and camera copy
Check proportions and density of photographs
Set bellows, lens, copy board
Position copy on copy board
Check camera lights
Focus and position image on ground glass
Set timers
Set area vacuum of camera back, and use filters and filter factors

SAFETY - HAZARD

Proper ventilation necessary to remove toxic fumes - (hazard) potential respiratory injury
Caution should be observed when using caustic chemicals - (hazard) potential injury to skin
Keep floor dry to eliminate slipping or falling - (hazard) potential injury from slipping or falling
Disconnect all electrical power when repairing and servicing equipment - (hazard) potential electrical shock and burns
Caution observed when using sharp-edged material - (hazard) potential body cuts

DECISIONS	CUES	ERRORS
Determine quality of camera copy	Visual observation of copy	Poor quality negatives
Determine densities	Proper density	Loss of time and material
Determine F stops and focal length		
Determine exposer time		
Determine filters and filter factors		

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection
Optics: reflection refraction, concave, convex magnification
$F/no = FL/D \quad E=I/d^2$
State of matter: light

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and R.P.M.
Axioms of basic mathematic (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

(TASK STATEMENT) EXPOSE AND PROCESS FILM AND PRINT MATERIAL WITH CAMERA

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflaction
Optics: reflection refraction, concave, convex magnification $F/no = FL/D$ $E=I/d2$
State of matter: light
Atoms: static electricity
Force: distortion

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematic (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION

All written communications should be printed legibly

(TASK STATEMENT) EXPOSE AND PROCESS FILM AND PRINT MATERIAL WITH CAMERA

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

- Process camera
- Timer
- Developing lights
- Inspection lights
- Safe lights
- Automatic film processor
- Automatic film dryer
- Developing trays
- Densitometer
- Thermometer
- Squeegee
- Cotton wipes
- Film roller
- Vacuum frame
- Point light source
- Dark room chemicals
- Temperature controlled sink
- Contact screen
- Half tone screen
  - a. glass
  - b. contact
- Bump light
- Tongs
- Filter factor charts
- Filters
- Film
- Photo print material
- Photo print processor
- Film slicer
- Office supplies
- Linon tester
- Mixing containers
- Storing containers
- Measuring containers
- Film drying line
- Gray scale
- Automatic chemical mixer
- Water supply

PERFORMANCE KNOWLEDGE

- Use appropriate film or print material
- Position film or print material on camera
- Position contact screen over film or print material when necessary
- Turn on vacuum and close camera back
- Expose film or print material
- Open camera, turn off vacuum and remove material
- Insert in automatic processor or begin tray development
- Place film in developer and agitate tray
- Develop to proper density by visual, time and temperature, or gray scale method
- Place negative in stop bath to stop development
- Place negative in hypo bath to fix and harden emulsion
- Place negative in running water to rinse thoroughly
- Inspect negative for quality
- Dry film with automatic drier or air dry
- Route finished product to other departments

SAFETY – HAZARD

- Proper ventilation necessary to remove toxic fumes (hazard) potential respiratory injury
- Caution should be observed when using caustic chemical- (hazard) potential injury to skin
- Keep floor dry to eliminate slipping or falling - (hazard) potential injury from slipping or falling
- Disconnect all electrical power when repairing and servicing equipment - (hazard) potential electrical shock and burns
- Caution observed when using sharp-edged material - (hazard) potential body cuts

DECISIONS

- Determine appropriate film or print material
- Select appropriate screen
- Determine density of negatives or print material
- Evaluate quality of negatives or print material

See reverse for Science, Math, and Communications

CUES

- Visual observation of film and printed material
- Emulsion side towards light
- Temperature

ERRORS

- Poor quality negatives
- Poor quality prints
- Loss of time and material

(TASK STATEMENT) EXPOSE AND PROCESS FILM AND PRINT MATERIAL BY CONTACT METHOD

SCIENCE

Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection
Optics reflection refraction, concave, convex magnification $F/no = FL/D$ $E = I/d^2$
State of matter: vaporization, chemical reaction, light, heat
Atoms: static electricity and absorption

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fraction and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

(TASK STATEMENT) EXPOSE AND PROCESS FILM AND PRINT MATERIAL BY CONTACT METHOD

42

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Process camera
Timer
Developing lights
Inspection lights
Safe lights
Automatic film processor
Automatic film dryer
Developing trays
Densitometer
Thermometer
Squeegee
Cotton wipes
Film roller
Vacuum frame
Point light source
Dark room chemicals
Temperature controlled sink
Contact screen
Halftone screen
a. glass
b. contact
Bump light
Tongs
Filter factor chart
Filters
Film
Photo print material
Photo print processor
Film slicer
Office supplies
Linen tester
Mixing containers
Storing containers
Measuring containers
Film drying line
Gray scale
Automatic chemical mixer
Water supply

PERFORMANCE KNOWLEDGE

Select appropriate film or print material
Position film or print material in contact frame
Position negative or positive over film or print material
Check contact
Set timer and expose for reverses, shrinks, spreads positives, duplicate negatives, combination negatives or contact prints
Proceed through development process
Insert in automatic processor or begin tray development
Place film in developer and agitate tray
Develop to proper density by visual, time and temperature, or gray scale method
Place negative in stop bath or stop development
Place negative in hypo bath to fix and harden emulsion
Place negative in running water to rinse thoroughly
Inspect negative for quality
Dry film with automatic drier or air dry
Route finished product to other departments

SAFETY -- HAZARD

Proper ventilation necessary to remove toxic fumes (hazard) potential respiratory injury
Caution should be observed when using caustic chemical - (hazard) potential injury to skin
Keep floor dry to eliminate slipping or falling - (hazard) potential injury from slipping or falling
Disconnect all electrical power when repairing and servicing equipment - (hazard) potential electrical shock and burns
Caution observed when using sharp-edged material - (hazard) potential body cuts

DECISIONS

Determine appropriate film or print material
Select appropriate screen
Determine density of negatives or print material
Evaluate quality of negatives or print material

CUES

Visual observation of film and printed material

Emulsion side towards light
Temperature

ERRORS

Poor quality negatives
Poor quality prints
Loss of time and material

See reverse for Science, Math, and Communications

A3

TASK STATEMENT) MAINTAIN DARK ROOM EQUIPMENT AND MAKE MINOR REPAIRS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Camera
Vacuum frame
Temperature controlled sink
Automatic film processor
Automatic film drier
Timers
Lights
Tray
Containers
Wrenches
Screwdrivers
Pliers
Allen wrenches
Fine oil
Grease
Brushes
Cleaning solvent
Fuses
Line gauge
Darkroom chemicals
Cutting tools

PERFORMANCE KNOWLEDGE

Lubricate according to machine manuals
Check and make all adjustments in accordance with machine manuals
Inspect and clean all pumps and motors
Clean dust, grease, and lint from machines
Repair all minor electric and mechanical malfunctions

SAFETY – HAZARD

Electrical precautions - (hazard) electrical shock, burn and overheating
Operate machine manually before turning on machine - (hazard) damage to equipment and injury to operator
Use proper tools and pressures - (hazard) damage to equipment and injury to operator
Collect and account for tools before operating - (hazard) damage to equipment and injury to operator
Do not inhale toxic fumes - (hazard) potential respiratory injury

DECISIONS

Evaluate complexity of repairs
Judge when qualified serviceperson is needed
Determine if machine is functioning properly

CUES

Operation of machine
Manufacturer's manual

ERRORS

Additional damage to machinery
Increase machines down time
Increased costs of repairs
Accelerated depreciation of machine

SCIENCE

Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection
Optics: reflection refraction, concave, convex magnification
$F/no = FL/D \quad E = I/d^2$
State of matter: vaporization, chemical reaction, light, heat

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

Duty F Performing Stripping Operations

1 Organize stripping work flow
2 Layout and mask flats
3 Open flats and opaque negatives
4 Maintain stripping equipment and make minor repairs

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(TASK STATEMENT) ORGANIZE STRIPPING WORK FLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Job specification
Art work
Final corrected and position lay up
Negatives
Office supplies
Dummies, page, layout and folding
Photographs
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Sort work to be masked
Mark masking sequence: half-tones, negatives, line negatives, reduced and enlarged negatives, windows for half tones or screen tints
Mark sequence of color masking
Check dummies for imposition
Evaluate all negatives for quality
Follow work flow priorities
File negatives

DECISIONS	CUES	ERRORS
Determine priorities Determine sequence Interpret all instructions and information Determine what, when and where to file flats Determine method of filing flats	Visual observation	Complicates production Loss of time, and material

SAFETY – HAZARD

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communciation between department and individuals

CAUTION

All written communications should be printed legibly

(TASK STATEMENT) LAYOUT AND MASK FLATS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

- Masking paper
- Line up table
- T square
- Triangles and french curves
- Compasses
- Ruling pens
- Dividers
- Scribers
- Straight edges
- Pencil
- Pens
- Rulers
- Grids
- Cutting tools
- Protractors
- Sensitivity
- Percentage scales
- Opaque
- Scissors
- Tape machines
- Tape, clean and red
- Masking paper tape
- Exposed film black
- High and low power glasses
- Color charts
- Ink books
- Block out material
- Photo prints
- Repro prints
- Light table
- Artwork
- Furnished copy
- Register systems
- Negatives
- Opaque brushes
- Razor blade
- Paper wipes
- Instructions (job ticket)

PERFORMANCE KNOWLEDGE

- Prepare masking sheets for particular job: press sheet, make up and trim size, imposition, duplicate negatives, steps and double burns
- Indicate color break and window positions
- Impose negative as predetermined
- Tape negatives emulsion side on top of masking sheet laying on light table
- Tape half-tones and screen tints to art windows
- Tape half-tones and screen tints to block out windows
- Tape each set of negatives to separate flats

SAFETY – HAZARD

- Use caution with cutting tools - (hazard) potential body cuts

DECISIONS

- Determine priorities
- Determine sequence
- Determine color breaks
- Distinguish negatives
- Evaluate product
- Determine screen tint angles
- Determine flat layout construction

CUES

- Visual observation of art work copy and dummies
- Squareness

ERRORS

- Loss of time
- Loss of material
- Improper imposition
- Poor product
- Complicated production

SCIENCE

- Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
- Machines used to gain mechanical advantage (levers, gears, and pulleys)
- Work: input, output, friction and efficiency in simple machines
- Optics: convex magnification
- Force: distortion

MATH – NUMBER SYSTEMS

- Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
- Rounding off decimals and whole numbers
- Changing percents to fractions and fractions to percents
- Finding a percent of a number and what percent one number is of another
- Measures of length in inches, picas, points and converting between each
- Measurement of time in tenths of an hour
- Ratio and proportions
- Reading and interpreting charts, tables and/or graphs
- Sequential ordering
- Measure of speed and r.p.m.

COMMUNICATIONS

- Choose and interpret technical manuals needed to perform task
- Interpret graphic arts jargon
- Read and write (print) information necessary to complete departmental functions
- Oral communication between departments and individuals

CAUTION

- All written communications should be printed legibly

(TASK STATEMENT) OPEN FLATS AND OPAQUE NEGATIVES

SCIENCE	MATH – NUMBER SYSTEMS
Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque) Light: nature of, absorption, reflection Optics: reflection refraction, convex magnification F/no = FL/D State of matter: light Atoms: static electricity and absorption Force: resistance, distortion	

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

(TASK STATEMENT) OPEN FLATS AND OPAQUE NEGATIVES

49

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Masking paper lin
Line up table
T square
Triangles and french curves
Compasses
Ruling pens
Dividers
Scribers
Straight edges
Pencil
Pens
Rulers
Grids
Cutting tools
Protractors
Sensitivity guide
Percentage scales
Opaque
Scissors
Tape machines
Tape, clear and red
Masking paper tape
Exposed film black
High and low power glasses
Color charts
Ink books
Block out material
Photo prints
Repro prints
Light table
Art work
Furnished copy
Register system
Negatives
Opaque brushes
Razor blades
Paper wipes

PERFORMANCE KNOWLEDGE

Open all areas of all material to be printed
Leave masking material to block non-printing areas
Prepare opaque
Opaque negative imperfections
Outline half-tone negatives
Dry brush opaque vignettes
Examine flats to art work for color break
Strip changes and correction into negative with clear tape
Mask changes and correction on second flat and double burn
Locate register and trim marks on flats
Perform all necessary scribing
Inspect finished flat for accuracy with paste-up, copy, art work, dummy layout

SAFETY – HAZARD

Use caution with cutting tools - (hazard) potential body cuts

DECISIONS

Determine color break
Determine printing area from
Determine printing area from non-printing areas
Identify proper block at material
Identify areas to be opaqued

CUES

Visual inspection of art work and negatives
Cut only through goldenrod
Thin opaque

ERRORS

Loss of time and material
Inferior product

See reverse for Science, Math, and Communications

49

TASK STATEMENT) MAINTAIN STRIPPING EQUIPMENT AND MAKE MINOR REPAIRS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Emery cloth
Sandpaper
Oil stone
All cutting tools
Light tables
Line up table
Glass cleaner
Dividers
Triangle
Ruling pens
Pencils
T squares
Straight edge
Scribing tool
Brushes
High powered glass
Screwdriver
Allen wrenches
Open end wrenches
Office supplies

PERFORMANCE KNOWLEDGE

Repair minor malfunctions, service, clean and sharpen stripping and drafting tools
Maintain trueness of line-up equipment

SAFETY – HAZARD

Electrical precautions - (hazard) electrical shock, burn and overheating
Operate machine manually before turning on machine - (hazard) damage to equipment and injury to operator
Use proper tools and pressures - (hazard) damage to equipment and injury to operator
Collect and account for tools before operating - (hazard) damage to equipment and injury to operator
Do not inhale toxic fumes - (hazard) potential respiratory injury

DECISIONS	CUES	ERRORS
Evaluate sharpness of all cutting tools Determine inventory levels Evaluate trueness of equipment	Visual inspection of equipment and tools Manufacturer's manual Cleanliness	Faulty flat construction Loss of material and time

SCIENCE

Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Optics: reflection and refraction, light
Atoms: static electricity

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
All written communications should be printed legibly

Duty G Performing Platemaking and Proofing Operations

1 Organize platemaking work flow
2 Determine plate exposure time and burn plates
3 Develop offset plates
4 Expose proofing material
5 Develop proofing material
6 Maintain platemaking equipment and make minor repairs

51

(TASK STATEMENT) ORGANIZE PLATEMAKING WORK FLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Job specifications
Art work
Final corrected and position layout
Flats
Office supplies
Dummies, page, layout and folding
Photographs
Plates
Job ticket

PERFORMANCE KNOWLEDGE

Sort flats to be exposed
Mark production sequence: half-tone and screen tint burns, line burns, check flats for proper imposition, inspect all flats for imperfections, scratches, and blocked images
Follow work flow priorities

DECISIONS

Determine priorities
Determine sequence
Interpret all instructions and information

CUES

Appearance of flats

SAFETY – HAZARD

ERRORS

Complicates production
Loss of time and material

SCIENCE

Offset place chemistry acids, bases, fixes and developers
Light refraction and absorption
Comprehension of $E = I/d^2$

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
$E = I/d^2$
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
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TASK STATEMENT) DETERMINE PLATE EXPOSURE TIME AND BURN PLATES

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Plates
Vacuum frame and timer
Exposure light source
Register system
Flats
Sensitivity guide
Storage and sorting area
Linen tester
Glass cleaner
Light table
Opaque and brushes
Tape
Plate reference manuals

PERFORMANCE KNOWLEDGE

Expose sample plate at different time intervals to determine correct step on sensitivity guide
Place plate in vacuum frame
Position mark on plate
Turn on vacuum and inspect for proper contact
Expose plate to predetermined time
Expose all additional masks required for each plate

SAFETY – HAZARD

Proper ventilation necessary to remove toxic fume - (hazard) potential respirator injury
Caution should be observed when using caustic chemicals- (hazard) potential injury to skin
Keep floor dry to eliminate slipping and falling
Disconnect all electrical power when repairing and servicing equipment - (hazard) potential electrical shock and burns
Caution observed when using sharp edged material - (hazard) potential body cuts
Caution observed when using carbon arc lights - (hazard) potential eye injury

DECISIONS	CUES	ERRORS
Determine exposure Determine type and size of plate Determine burning sequence	Visual inspection of flats and sensitivity guide Gray scale Clean glass	Shortened plate production life Inferior images on plate Loss of time and material

SCIENCE

$E = I/d^2$

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
$E - I/d^2$
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
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CAUTION
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TASK STATEMENT) DEVELOP OFFSET PLATES

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Plates
Plate making chemicals
Developing sink
Sponges
Wipes or cheese cloth
Squeegee
Automatic plate developer or processor
Automatic plate washer and gummer
Linen tester
Scribers
Storage area

PERFORMANCE KNOWLEDGE

Feed plate through automatic developer or processor
Feed plate through washer, gummer
Hand develop plates with compatible chemicals
Wash surplus chemicals from plate
Add preserving chemicals
Inspect for accuracy and quality
Make deletions and additions
Route finished products to other departments

DECISIONS

Determine developing process
Select compatible chemicals
Evaluate accuracy and quality

CUES

Appearance of developed plate - eveness

ERRORS

Shorten plate production life
Inferior plate images
Loss of time and material

SAFETY – HAZARD

Proper ventilation necessary to remove toxic fumes - (hazard) potential respiratory injury
Caution should be observed when using caustic chemicals - (hazard) potential injury to skin
Keep floor dry to eliminate slipping or falling - (hazard) potential injury from slipping and falling
Disconnect all electrical power when repairing and servicing equipment - (hazard) potential electrical shock and burns
Caution observed when using sharp edged material - (hazard) potential body cuts

SCIENCE

Offset plate chemistry:
a. acids
b. fixers
c. developers
Light refraction and absorption
Comprehension of $E = I/d^2$

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
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Measures of length in inches, picas, points and converting between each
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Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
$E = I/d^2$
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COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
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CAUTION
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(TASK STATEMENT) EXPOSE PROOFING MATERIAL

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Proofing material
Proofing chemistry
Developing sink
Sponges
Wipes or cheesecloth
Squeegee
Linen tester
Storage area
Vacuum frame and timer
Exposure light source
Register system
Flats
Glass cleaner
Light table
Opaque and brushes
Proof material
Reference manuals
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Indicate exposure times using test samples
Place proofing material in vacuum frame
Position mask on material
Turn on vacuum and inspect for proper contact
Expose material to predetermined time
Expose all additional masks required for each proof

SAFETY – HAZARD

Proper ventilation necessary to remove toxic fume - (hazard) potential respirator injury
Caution should be observed when using caustic chemicals - (hazard) potential injury to skin
Keep floor dry to eliminate slipping and falling
Disconnect all electrical power when repairing and servicing equipment - (hazard) potential electrical shock and burns
Caution observed whne using sharp edged material - (hazard) potential body cuts
Caution observed when using carbon arc lights - (hazard) potential eye injury

DECISIONS	CUES	ERRORS
Determine exposure Determine type and size of proofing material Determine burning sequence	Appearance of finished material Clean glass	Lack of quality of finished proof Loss of color densities Loss of time and material Loss of customer's confidence

SCIENCE

$E = I/d^2$

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
$E = I/d^2$
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

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erpret graphic arts jargon
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(TASK STATEMENT) DEVELOP PROOFING MATERIAL

TOOLS, EQUIPMENT, MATERIALS OBJECTS ACTED UPON

Proofing material
Proofing chemistry
Developing sink
Sponges
Wipes
Squeegee
Linen tester
Storage area
Mounting board
Tape
Rubber cement

PERFORMANCE KNOWLEDGE

Hand develop proofing material with compatible chemicals
Wash surplus chemicals from proofing material
Inspect for accuracy and quality
Make deletions and additions
Mounting and route products to other departments

SAFETY - HAZARD

Proper ventilation necessary to remove toxic fumes - (hazard) potential respiratory injury
Caution should be observed when using caustic chemicals - (hazard) potential injury to skin
Keep floor dry to eliminate slipping or falling - (hazard) potential injury from slipping and falling
Disconnect all electrical power when repairing and servicing equipment - (hazard) potential electrical shock and burns
Caution observed when using sharp edged material - (hazard) potential body cuts

DECISIONS	CUES	ERRORS
Determine developing process Select compatible chemicals Evaluate accuracy and quality	Appearance of finished material Even development	Lack of quality of finished proof Loss of color densities, time, quality, and customers confidence

SCIENCE

Offset plate chemistry
a. acids
b. fixers
c. developer
Light refraction and absorption
Comprehension of $E = I/d^2$

MATH - NUMBER SYSTEMS

Addition, subtraction, multiplication, and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
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Oral communication between departments and individuals

CAUTION
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(TASK STATEMENT) MAINTAIN PLATEMAKING EQUIPMENT AND MAKE MINOR REPAIRS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Wrenches
Screwdrivers
Pliers
Allen wrenches
Fine oil
Grease
Brushes
Cleaning solvent
Fuses
Line gauge
Cutting tools
Electrician's tape
Vacuum frame
Plate developing sink
Timers
Trays and container
Light source

PERFORMANCE KNOWLEDGE

Repair minor malfunctions, service and clean platemaking and developing equipment
Lubricate according to machine manuals
Check and make all adjustments in accordance with machine manual
Inspect and clean all pumps and motors
Clean dust, grease and lint from machines
Repair all electric and mechanical malfunctions

SAFETY – HAZARD

Electrical precautions - (hazard) electrical shock, burn and overheating
Operate machine manually before turning on machine - (hazard) damage to equipment and injury to operator
Use proper tools and pressures - (hazard) damage to equipment and injury to operator
Collect and account for tools before operating - (hazard) damage to equipment and injury to operator
Do not inhale toxic fumes - (hazard) potential respiratory injury
Caution around hot carbon arcs - (hazard) burns

DECISIONS

Evaluate complexity of repairs
Judge when qualified serviceperson is needed
Determine if machine is functioning properly

CUES

Visual inspection
Manufacturer's manual

ERRORS

Additional damage to machinery
Increase machines' down time
Increased costs of repairs
Accelerated depreciation of machine

SCIENCE

Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Offset plate chemistry: acids, bases, fixes and developers
Light refraction and absorption
Comprehension $E = I/d^2$

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
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Duty H Operating Offset Presses

1 Organize offset press work flow
2 Perform pre-press make ready
3 Make ready and position
4 Operate offset presses
5 Clean offset presses
6 Maintain offset presses and make minor repairs

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(TASK STATEMENT) ORGANIZE OFFSET PRESS WORK FLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Artwork
Instructions (job ticket)
Layouts - pasteups
Dummies
Plates
Color swatches
Ink formula book
Daily schedule
Paper samples
Linen tester
Pencil
Paper clips
Tape
Printed samples to reproduce
Photographs
Renderings
Instructions (job ticket)

PERFORMANCE KNOWLEDGE

Sort work to be printed according to job priority printing sequence: color, delivery priority, press limitations and size
Check folding dummies for imposition
Evaluate all plates for quality
Compute quality of ink needed
Follow internal work flow priority
Expedite all instructions to proper pressperson

DECISIONS

Determine priorities
Determine sequence
Interpret all instructions and information

CUES

Visual inspection of work to be produced (layout)
Job ticket

ERRORS

Complicate production
Loss of time and material

SAFETY – HAZARD

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Light. nature of, absorption, reflection
Optics: reflection refraction, convex magnification
State of matter: vaporization, chemical reaction, light, heat
Atoms: static electricity and absorption
Force: resistance, distortion

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportions
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individuals

CAUTION
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(TASK STATEMENT) PERFORM PREPRESS – MAKE READY

TOOLS, EQUIPMENT MATERIALS OBJECTS ACTED UPON

Press tools
Liquid containers
Sponges
Solvents
Lubricants
Fountain chemicals
Offset printing presses
All expendable press supplies: blankets, dampener cover, ductor covers, feed board tape, etc.
Cotton cleaning material
Manufacturer's manuals

PERFORMANCE KNOWLEDGE

Lubricate according to press manual
Check and set all rollers according to press manual
Replace if necessary all roller covers and blankets
Inspect and pack blanket
Mix and fill dampener's fountain
Turn press over to check operation
Check vacuum pressure and filters in pumps

SAFETY – HAZARD

Caution: Long hair, loose clothing, horse play, flammable liquids, loose tools and objects left laying on machinery, spilled liquids on floor, rings and jewelry, bare wires, caustic chemicals
Observation of all built-in safety devices
Observation of all industry safety standards
Place all combustible materials in fireproof container (hazard) fire
Do not lift heavy loads from a bending position - (hazard) injury
Locate and know use of fire extinguishers - (hazard) fire

DECISIONS	CUES	ERRORS
Identify press nomenclature Evaluate condition of expendable supplies and material Formulate solutions Evaluate press performance	Visual inspection of press and chemicals	Excessive wear Inferior quality Improper ink and water balance Loss of time

SCIENCE

Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
State of matter, vaporization, chemical reaction, light, heat
Atoms: static electricity and absorption
Force: resistance, distortion, friction

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
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Oral communication between departments and individuals

CAUTION
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(TASK STATEMENT) MAKE READY AND POSITION

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Press tools
Liquid containers
Sponges
Solvents
Lubricants
Fountain chemicals
Offset printing presses
All expendable press supplies: blankets, dampener covers, ductor covers, feed board tape, etc.
Cotton cleaning material
Manufacturer's manuals
Dummies
Plates
Job ticket
Layout
Ink swatches and ink formula book
Linen tester
Pencil
Printed samples
Press paper
Ink and additives
Setoff spray
Ink knives and ink guns
Ink mixing glass
Ink mixing scale

PERFORMANCE KNOWLEDGE

Make ready offset press · set feeder, set delivery, set ink fountain, attach offset plate
Position copy for margins, head space, for back up where needed, registration
Set ink fountain for varying density
Obtain OK signature from authorized personnel

SAFETY – HAZARD

Caution long hair, loose clothing, horse play, flammable liquids loose tools and objects left laying on machinery, spilled liquids on floor, rings and jewelry, bare wires, caustic chemicals
Observation of all built-in safety devices
Observation of all industry safety standards
Place all combustible material in fireproof container - (hazard) fire
Do not lift heavy loads from a bending position - (hazard) injury
Locate and know use of fire extinguishers - (hazard) fire

DECISIONS	CUES	ERRORS
Determine proper feeder adjustments Determine proper delivery adjustments Determine ink fountain adjustment Determine proper margin Determine proper head space Determine back-up position Evaluate registration Evaluate ink density	Appearance and feel of paper to be printed Visual inspection of press proof	Inferior printed product Loss of time and material Press damage Loss of customer confidence

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Machines: used to gain mechanical advantage (levers, gears and pulleys)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection
Optics: reflection refraction, convex magnification
State of matter: vaporization, chemical reaction, light, heat
Atoms: static electricity and absorption
Force: resistance, distortion, friction

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions, decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
Read and write (print) information necessary to complete departmental functions
Oral communication between departments and individual

CAUTION

All written communications should be printed legibly

(TASK STATEMENT) OPERATE OFFSET PROCESSES

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Press tools
Liquid containers
Sponges
Solvents
Lubricants
Fountain chemicals
Offset printing presses
All expendable press supplies: blankets, dampener covers, ductor covers, feed board tape, etc.
Cotton cleaning material
Manufacturer's manuals
Dummies
Plates
Job ticket
Layout
Ink swatches and ink formula book
Linen tester
Pencil
Printed samples
Press paper
Ink and additives
Setoff spray
Ink knives and ink guns
Ink mixing glass
Ink mixing scale
Stock carts and skids

PERFORMANCE KNOWLEDGE

Maintain register
Maintain ink and water balance
Maintain ink density
Load and unload stock
Add to ink and water fountains
Maintain feeder and delivery adjustments
Watch counter and stop press at completion of quantity
Pile stock in neat manner on stock carts and skids for distribution to other departments
Shut down press at end of shift

SAFETY – HAZARD

Caution: long hair, loose clothing, horse play, flammable liquids, loose tools and objects left laying on machinery, spilled liquids on floor, rings and jewelry, bare wires, caustic chemicals
Observation of all built-in safety devices
Observation of all industry safety standards
Place all combustible material in fireproof container - (hazard) fire
Do not lift heavy loads from a bending position - (hazard) injury
Locate and know use of fire extinguishers - (hazard) fire

DECISIONS	CUES	ERRORS
Evaluate press operation Identify foreign noises Evaluate production quality	Listen for any unusual noise in press during operation	Press damage Inferior printed product Loss of time, material and customer confidence

SCIENCE

Color: effects of illumination on color, surface color, mixing spectrum colors, mixing primary colors, mixing complimentary colors, additive and subtractive mixing (transparent and opaque)
Machines: used to gain mechanical advantage (levers, gears, and pulleys)
Work: input, output, friction and efficiency in simple machines
Light: nature of, absorption, reflection
Optics: reflection refraction, convex magnification
State of matter: vaporization, chemical reaction, light, heat
Atoms: static electricity and absorption
Force: resistance, distortion, friction

MATH – NUMBER SYSTEMS

Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
Rounding off decimals and whole numbers
Changing percents to fractions and fractions to percents
Finding a percent of a number and what percent one number is of another
Measures of length in inches, picas, points and converting between each
Measurement of time in tenths of an hour
Ratio and proportion
Reading and interpreting charts, tables and/or graphs
Sequential ordering
Measure of speed and r.p.m.
Axioms of basic mathematics (short cuts)
Commutative, associative and distributive

COMMUNICATIONS

Choose and interpret technical manuals needed to perform task
Interpret graphic arts jargon
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Oral communication between departments and individuals

CAUTION
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(TASK STATEMENT) CLEAN OFFSET PRESSES

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Rags
Solvents
Clean-up attachments
Clean-up mats
Broom and brushes
Oil
Containers
Ink knives

PERFORMANCE KNOWLEDGE

Clean up of press while in operation: clean fountains, distribute ink solvent on running press, engage clean up attachment, continue second two steps until press is clean, and shut off press

Clean up press by hand: turn over press by fly wheel, remove ink rollers and wash, wash blanket and bearings, wash impression cylinder, wipe press down, clean and polish area around press

SAFETY - HAZARD

Caution: long hair, loose clothing, horse play, flammable liquids, loose tools and objects left laying on machinery, spilling liquids on floor, rings and jewelry, bare wires caustic chemicals

Observation of all built-in safety devices

Observation of all industry safety standards

Place all combustible material in fireproof container - (hazard) fire

Do not lift heavy loads from a bending position - (hazard) injury

Locate and know use of fire extinguishers -(hazard) fire

DECISIONS	CUES	ERRORS
Identify proper solvents Determine quantity of solvents applied to press Select proper cleaning sequence Evaluate completed wash-up	Proper amount of solvents	Dirty press Damage to press Inferior printed product Loss of time and material

SCIENCE

Understanding of spontanious combustion and its effects

Force: resistance, friction

MATH - NUMBER SYSTEMS

COMMUNICATIONS

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(TASK STATEMENT) MAINTAIN OFFSET PRESSES AND MAKE MINOR REPAIRS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

- Offset presses
- Press manuals
- Wrenches
- Pliers
- Screwdrivers
- Press tools
- Grease and gun
- Oil
- Fuses
- Line gauge
- Gloves
- Micrometer
- Allen wrenches
- Expedable press supplies: blankets, dampener covers, ductor covers, feed board tap, etc.
- Press chemical supplies
- Press gauges
- Electrical tape
- Containers
- Rags
- Air compressor
- Solvents
- Dust brush
- Ink and knives

PERFORMANCE KNOWLEDGE

- Lubricate according to press manual
- Check and make all adjustments according to press manual
- Inspect and clean all screens and filters
- Inspect and clean all pumps and motors
- Clean all dust, grease, and lint from machines
- Repair all small malfunctions: mechanical, electrical
- Polish press area and clean internal area of press

SAFETY – HAZARD

- Caution: long hair, loose clothing, horse play, flammable liquids, loose tools and objects left laying on machinery, spilled liquids on floor, rings and jewelry, bare wires, caustic chemicals
- Observation of all built-in safety devices
- Observation of all industry safety standards
- Place all combustible material in fireproof container - (hazard)fire
- Do not lift heavy loads from a bending position - (hazard) injury
- Locate and know use of fire extinguishers - (hazard) fire

DECISIONS

- Evaluate complexity of repairs
- Judging when qualified serviceperson is needed
- Determine if machine is functioning properly

CUES

- Visual inspection of press
- Manufacturer's manual

ERRORS

- Additional damage to machinery
- Increase machines' down time
- Increased costs of repairs
- Accelerated depreciation of machine

SCIENCE

- Machines: used to gain mechanical advantage (levers, gears, and pulleys)
- Work: input, output, friction and efficiency in simple machines
- Atoms: static electricity, absorption
- Force: resistance, distortion, inertia, momentum, friction

MATH – NUMBER SYSTEMS

- Addition, subtraction, multiplication and division of whole numbers, fractions and decimals
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- Measure of speed and r.p.m.
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Duty I Performing Finishing Operations

1 Organize bindery work flow
2 Perform pre-bindery set up (machines)
3 Operate bindery equipment (machines)
4 Perform hand bindery operations
5 Maintain bindery equipment and make minor repairs

(TASK STATEMENT) ORGANIZE BINDERY WORKFLOW

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Art work
Instructions (job ticket)
Layouts, paste-ups
Dummies
Daily schedule
General office supplies
Printing stock: samples,inventory
Paper measuring tools
Finished printed product
Operation manuals
Pre-printed sample (copy)

PERFORMANCE KNOWLEDGE

Sort work flow according to job priorities
Sort work flow according to finishing operations: mark stock, mark trimming and cutting operations, mark folding operations, mark stitching operations, mark drilling and punching operations, mark packing operations,mark perforations and scores operations, mark hand bindery operations
Construction and check folding dummies
Expedite all instructions to operators

SAFETY – HAZARD

DECISIONS

Determine priorities
Determine sequence
Interpret all instructions and information

CUES

Appearance on size of work to be processed
Job ticket

ERRORS

Complicates production
Loss of time, material and customer confidence

SCIENCE

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(TASK STATEMENT) PERFORM PRE-BINDERY SET-UP (MACHINES)

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

All individual bindery machines
All individual bindery machines tools
All individual bindery machines manuals
Lubricants
Measuring devices: linear and thickness
All expendable bindery supplies: wire, glue, plastic cones, cotton thread, chip board
Folding dummies
Job ticket
Pencils
Paper clips
Stapler
Stock
Pre-finished sample (copy)
Inventory (stock)
Work schedule
Liquid containers
Stock tables, carts, chairs and skids

PERFORMANCE KNOWLEDGE

Lubricates according to bindery machine manuals
Check and set all bindery machines according to the job and manual specifications
Replace when necessary all bindery expendable supplies
Run sample of finished product
Check sample with proper authority and receive initial OK

SAFETY – HAZARD

Caution: long hair, loose clothing, horse play, flammable liquids loose tools and objects left laying on machinery, spilled liquids on floor, rings and jewelry, bare wires, caustic chemicals
Observation of all built-in safety devices
Observation of all industry safety standards
Place all combustible materials in fireproof container - (hazard) fire
Do not lift heavy loads from a bending position - (hazard) injury
Locate and know use of fire extinguishers - (hazard) fire

DECISIONS	CUES	ERRORS
Identify bindery machine nomenclature Evaluate condition of expendable supplies and materials Formulate solutions Evaluate machine performance	Appearance of sample copy	Excessive wear Inferior quality Loss of time

SCIENCE

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(TASK STATEMENT) OPERATE BINDERY EQUIPMENT (MACHINES)

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

All individual bindery machines
All individual bindery machines tools
All individual bindery machines manuals
Lubricants
Measuring devices: linear and thickness
All expendable bindery supplies: wire, glue, plastic cones, cotton thread, chip board
Folding dummies
Job ticket
Pencils
Paper clips
Stapler
Stock
Pre-finished sample (copy)
Inventory (stock)
Work schedule
Liquid containers
Stock tables, carts, chairs and skids

PERFORMANCE KNOWLEDGE

Operation of all bindery machinery
a Paper cutters - hand and automatic
b Folders - friction feed and suction feed
c Stitchers and stitcher trimmers - hand, semi-automatic and automatic
d Perforators and scorers
e Collators
f Drilling and punching
g Perfect binding - semi automatic, and automatic
h Tipping
i Packaging
j Jogging

SAFETY – HAZARD

Caution: long hair, loose clothing, horse play, flammable liquids loose tools and objects left laying on machinery, spilled liquids on floor, rings and jewelry, bare wires, caustic chemicals
Observation of all built-in safety devices
Observation of all industry safety standards
Place all combustible materials in fireproof container - (hazard) fire
Do not lift heavy loads from a bending position - (hazard) injury
Locate and know use of fire extinguishers - (hazard) fire

DECISIONS	CUES	ERRORS
Evaluate machine operations Identify foreign noises Evaluate production quality	Visual inspection of work produced	Machine damage Inferior finished product Loss of time, materials and customer confidence

SCIENCE

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(TASK STATEMENT) PERFORM HAND BINDERY OPERATIONS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Stock to complete job
Equipment
Pad conter
Bone
Counting comb
Stock tables, carts, chairs and skids
Padding brush
Slicer
Glue
Tape
Cartons
Labels
Staple.
Pencil
Paper clip
Job ticket

PERFORMANCE KNOWLEDGE

Cut and trim on hand cutter
Pad, jog and collate
Tip, count
Slice, tape, wrap
Box, label; and load and unload automatic equipment

SAFETY - HAZARD

Caution: long hair, loose clothing, horse play, flammable liquids, loose tools and objects left laying on machinery, spilled liquids on floor, rings and jewelry, bare wires, caustic chemicals
Observation of all built-in safety devices
Observation of all industry safety standards
Place all combustible material in fireproof containers - (hazard) fire
Do not lift heavy loads from a bending position - (hazard) injury
Locate and know use of fire extinguishers - (hazard) fire

DECISIONS	CUES	ERRORS
Determine production sequence Evaluate finished product	Appearance of completed product Job ticket	Loss of time Loss of materials, and customer confidence

SCIENCE

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(TASK STATEMENT) MAINTAIN BINDERY EQUIPMENT AND MAKE MINOR REPAIRS

TOOLS, EQUIPMENT, MATERIALS OBJECTS ACTED UPON

All individual bindery machines
All individual bindery machines tools
All individual bindery machine manuals
Lubricants
Wrenches
Screwdrivers
Allen wrenches
Grease and gun
Electrical tape
Fuses
Containers
Rags
Air compressor
Solvents
Dust brush

PERFORMANCE KNOWLEDGE

Lubricate according to machine manual
Check and make all adjustments according to machine manual
Inspect and clean all pumps and motors
Clean dust, grease, and lint from machines
Repair all small malfunctions mechanical and electrical

SAFETY - HAZARD

Caution long hair, loose clothing, horse play, flammable liquids loose tools and objects left laying on machinery, spilled liquids on floor, rings and jewelry, bare wires, caustic chemicals
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Do not lift heavy loads from a bending position (hazard) injury
Locate and know use of fire extinguishers - (hazard) fire

DECISIONS

Evaluate complexity of repairs
Judge when qualified serviceperson is required
Determine if machines are functioning properly

CUES

Visual inspection of machines
Listen for foreign noises
Manufacturer's manual

ERRORS

Additional damage to machinery
Increase machines down time
Increased cost of repairs
Accelerated depreciation of machines

SCIENCE

Machines: used to gain mechanical advantage (levers, gears, and pulleys)
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